



TM220HD

HD encoder
DVB-T/DVB-C out



USER MANUAL V1.0

Congratulations on your purchase of the TM220HD !

This 'state of the art' product, is a HD encoder. The video and audio input is taken from HDMI.

After compressing the video into H264 and audio in AAC, the output can be configured as DVB-T or as DVB-C modulator.

Stand-alone configuration is made easy through 4 tact switches and ergonomic menu's. To make the configuration of the TM220HD ultra simple, a special software TMHDIface is available that you can download on our website anttron.com

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1 - Safety considerations

1.1 CONNECTING TO THE MAINS SUPPLY

This product has to be connected to the mains supply. If there is the slightest doubt concerning the type of connection available on the installation, please contact your supplier of electricity. Before carrying out maintenance operation or modification of the installation, the modulator has to be disconnected. Remark : only use the supplied power adaptor.

1.2 OVERVOLTAGE

An overvoltage on the mains supply, can cause shortcircuits or fire. Never overload the power lines.

1.3 LIQUIDS

This module should be protected from splashes. Please assure yourself that no containers containing liquids are placed on this module. Also be aware of other persons splashing liquids on the module.

1.4 CLEANING

Disconnect the module before cleaning. Use only a humid cloth without solvent.

-

1.5 VENTILATION

In order to assure an adequate air circulation and to prevent overheating, the ventilation holes should not be obstructed. The module may not be installed in a hermetically sealed environment. Other electronic products or heat producing items may not be placed upon or near the module.

1.6 ACCESSORIES

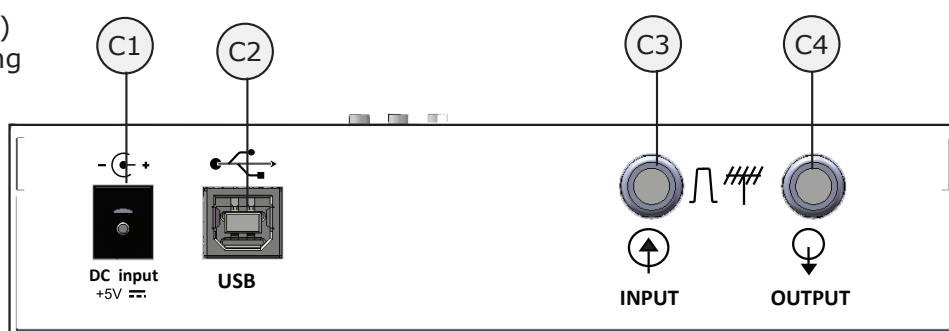
The use of accessories not manufactured by the manufacturer can cause damage to the module.

1.7 INSTALLATION OF THE MODULE

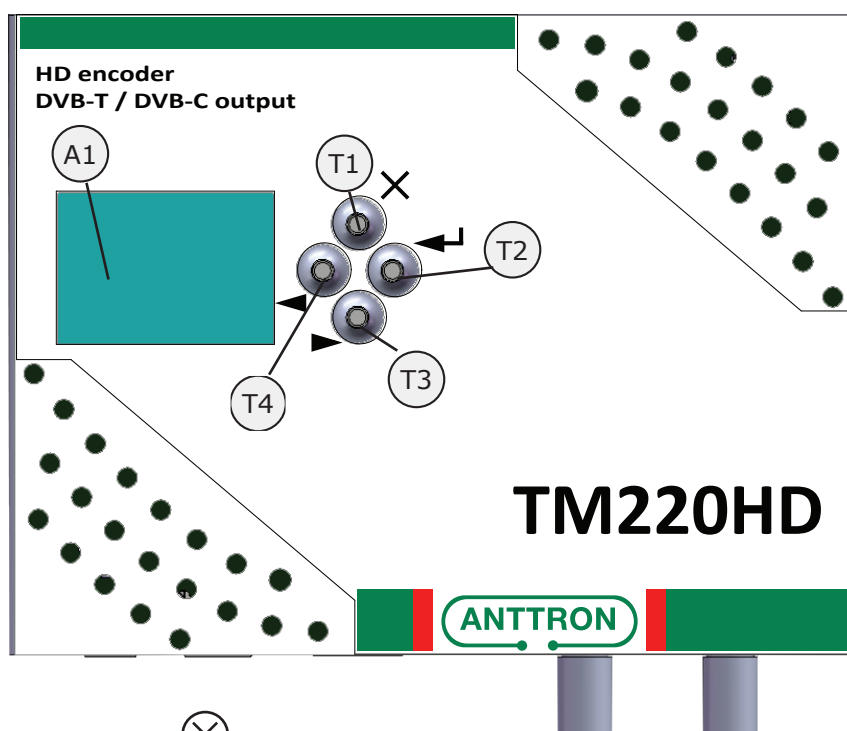
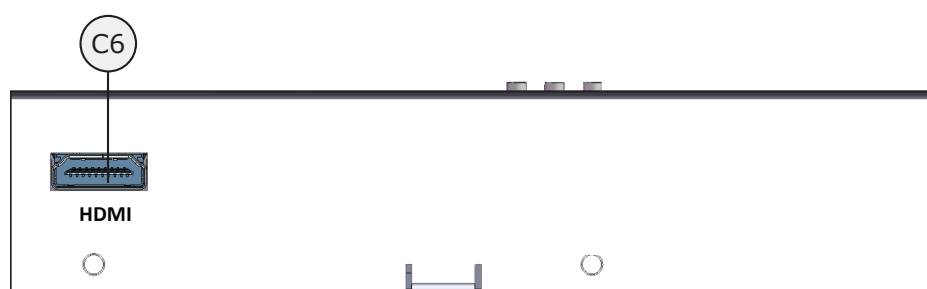
The module must be installed in a place well protected from direct sunlight. All measures have to be taken to avoid installation in humid or sunny place. Do not install near heating elements or other devices producing heat. Assure yourself that the module is placed at least 10 cm from other equipment with is susceptible to electromagnetic radiation. Do not install the module on instable items. A fall can cause physical or material damage.

2 - Description of the different elements

- C1** Power supply input (5V/4A)
- C2** USB input (for programming the TM250HD by PC)
- C3** RF input
- C4** RF output



- C6** HDMI input



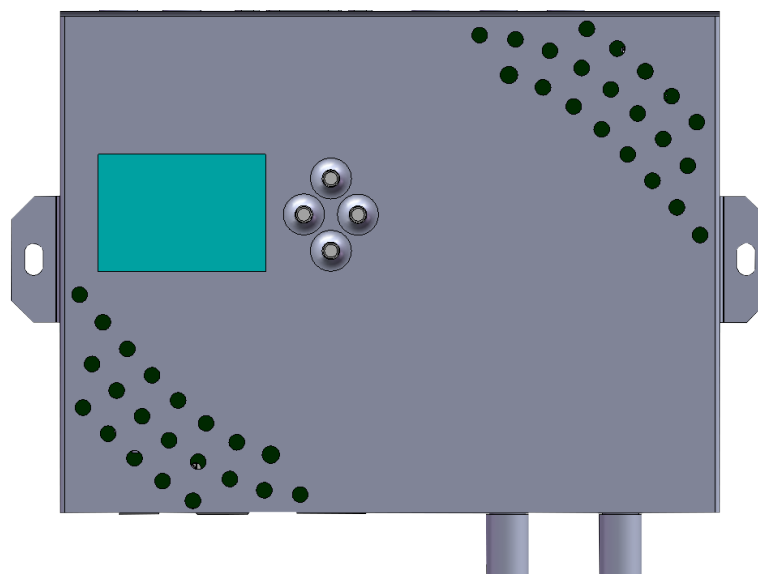
- A1** Display
- T1** **CANCEL/RETURN** button
- T2** **ENTER** button
- T3** ► (move forward/down) button
- T4** ◀ (move backward/up) button

3 - Installation and menu structure

3.1 - Installation

Install the TM220HD against a wall using the wall fixation brackets to ensure cooling of the housing through natural convection. (see drawing)

Connect the audio and video source using a HDMI cable. Connect the RF input cable (if present) and the RF output cable. If the RF input is not used, please connect a 75 ohm terminating resistor to it. Once the modulator installed and the cables connected, please proceed connecting the power supply to the modulator.



3.2 - Powering up

Plug in the connector of the power supply. The display will show the ANTTRON logo while booting. Once the modulator has booted correctly the main menu will appear.

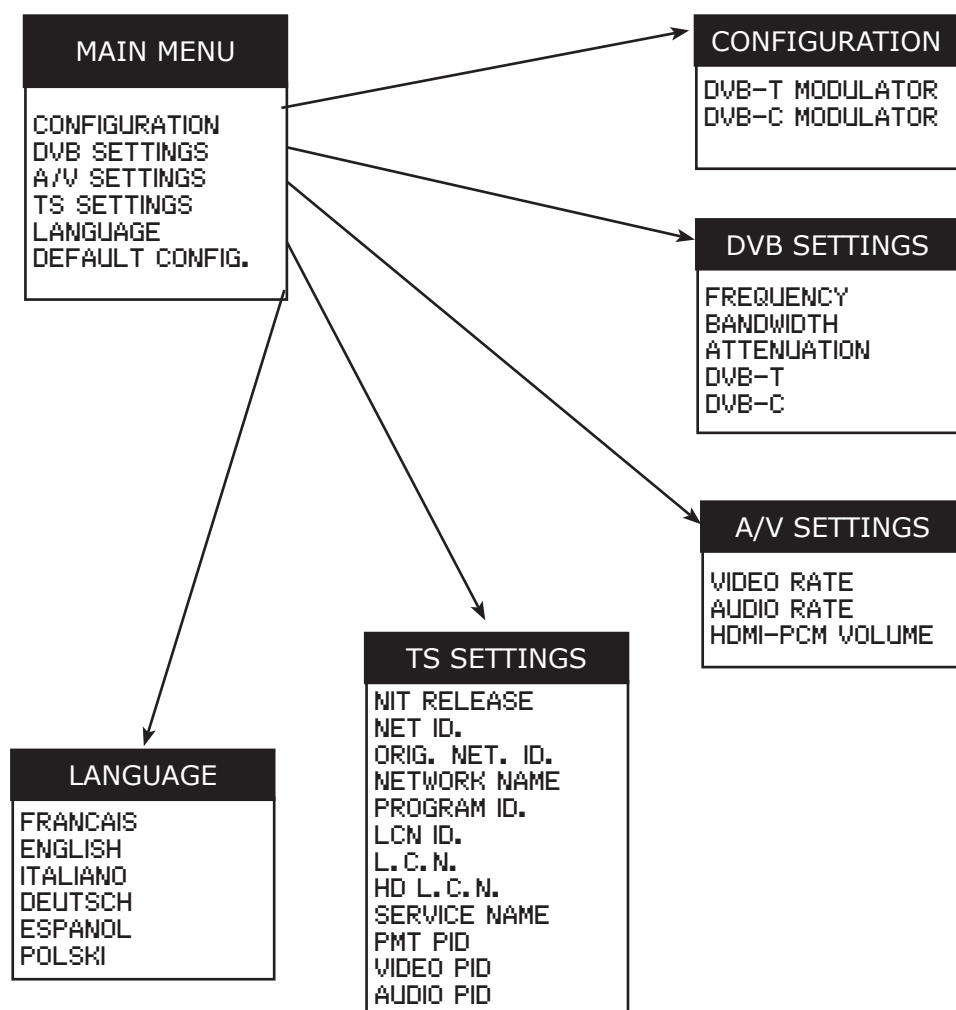
In the first line the model number is displayed (TM220HD) followed by the installed firmware version.

When the modulator is encoding, the actual resolution is displayed in the bottom line of the display. When the modulator is initialising, the mention INIT is displayed at the bottom line.

```
TM220HD 2.6
CONFIGURATION
DVB SETTINGS
A/V SETTINGS
TS SETTINGS
1280x720-50fps
```

3.3 - Menu structure

The TM220HD has different menus allowing easy access to the different parameters and to change them when necessary. Below you will find the structure of the different menus.



In order to go from one menu to the other use the MOVE **UP/DOWN** keys to select the menu option. Press the **ENTER** button to select this option. Press the **CANCEL** button to go back to the previous menu.

To set parameters, whether you have the option to select a specific value. In the other case some number or text string should be entered. In that case, use the buttons ► and ◀ to move to the desired character and press the ENTER button to confirm. Please note the following **SPECIAL CHARACTERS** :

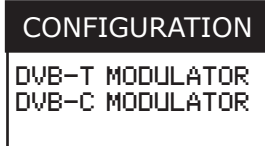
↵ confirm the modified value / ✕ erase all / ← backspace

↔ move cursor back or forward

4 - Setting up the TM220HD

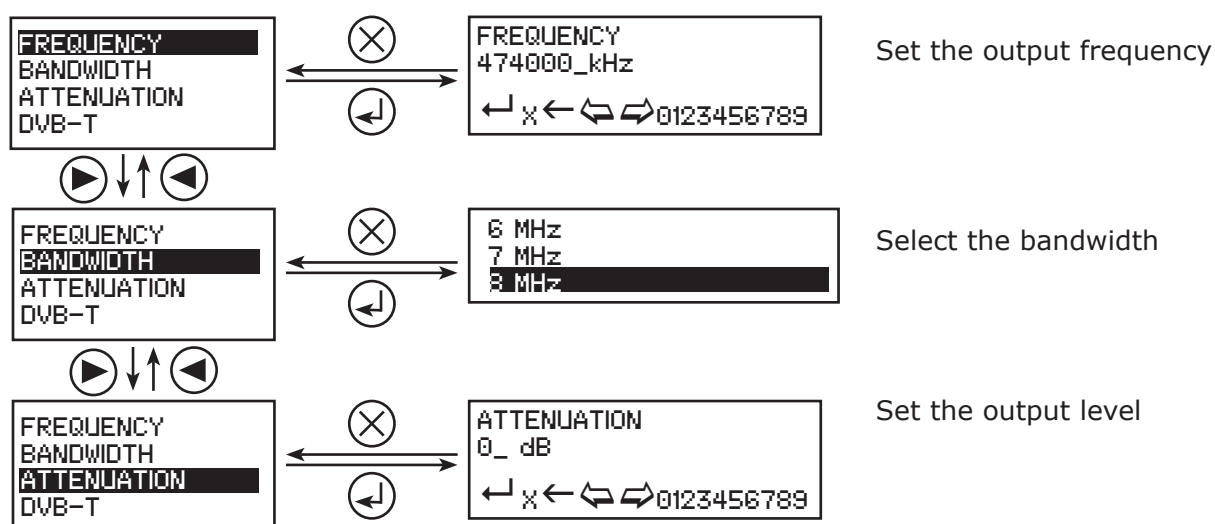
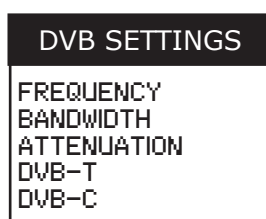
4.1 - The CONFIGURATION menu

In this menu you can setup your TM220HD as DVBT modulator or DVBC modulator. Select the appropriate option with the buttons ► and ◀ and press the ENTER button to confirm.



4.2 - The DVB settings menu

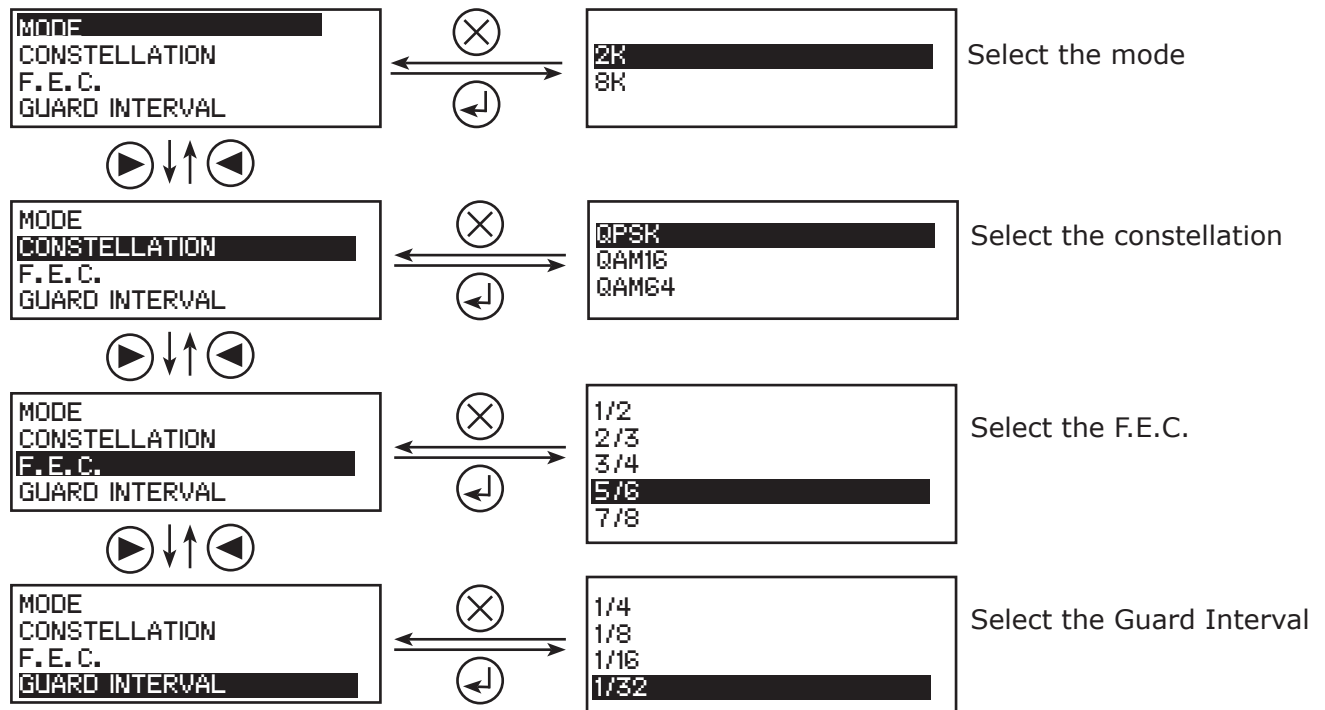
If the TM220HD is configured as DVBT modulator or DVBC modulator, you can set in this menu the output frequency, bandwidth, output level and specific parameters for DVB-T or DVB-C.



4.2.1 - Setting DVB-T parameters

FREQUENCY
BANDWIDTH
ATTENUATION
DVB-T

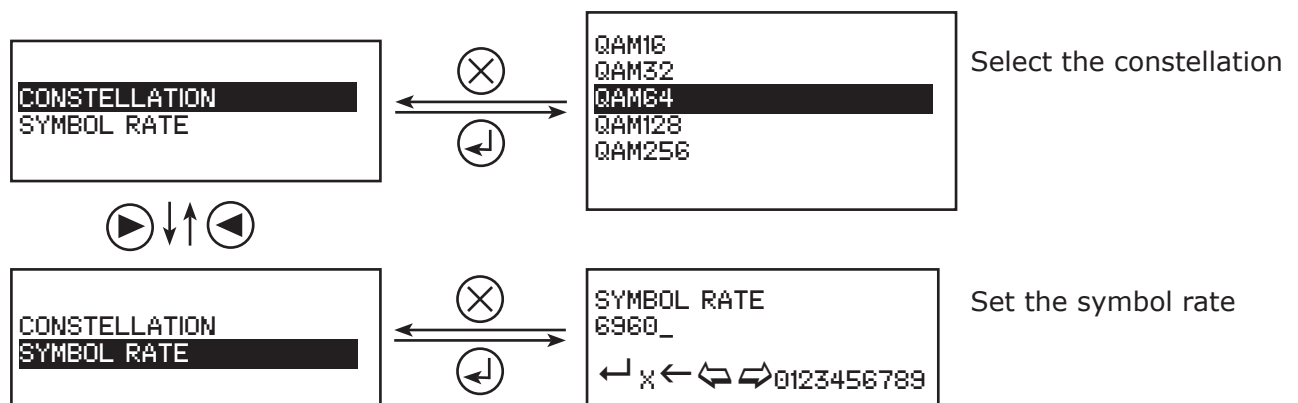
When you select DVB-T and press the ENTER button, the following submenu appears. It allows you to set the DVB-T parameters.



4.2.2 - Setting DVB-C parameters

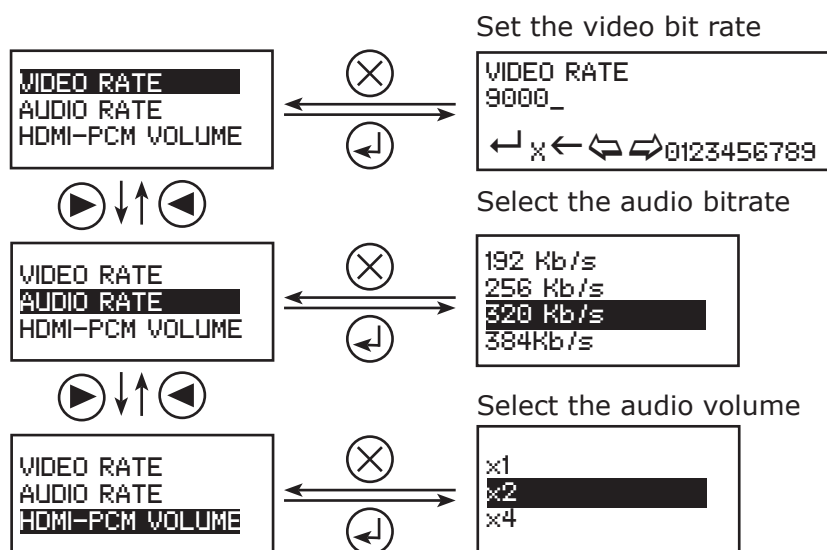
BANDWIDTH
ATTENUATION
DVB-T
DVB-C

When you select DVB-C and press the ENTER button, the following submenu appears. It allows you to set the DVB-C parameters.



4.3 - The AV settings menu

This menu allows you to adjust specific video and audio parameters.



4.4 - The TS settings menu

This menu allows you to adjust specific parameters of the transport stream.

TS SETTINGS
NIT RELEASE
NET ID.
ORIG. NET. ID.
NETWORK NAME
TS ID.
PROGRAM ID.
LCN ID.
L. C. N.
HD L. C. N.
SERVICE NAME
PMT PID
VIDEO PID
AUDIO PID

NIT RELEASE NET ID. ORIG. NET. ID. NETWORK NAME ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	NIT RELEASE 27_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the NIT version
NIT RELEASE NET ID. ORIG. NET. ID. NETWORK NAME ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	NET ID. 27_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the Network ID.
NIT RELEASE NET ID. ORIG. NET. ID. NETWORK NAME ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	ORIG. NET. ID. 27_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the Original Network ID.
NIT RELEASE NET ID. ORIG. NET. ID. NETWORK NAME ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	NETWORK NAME NoName_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the NETWORK NAME
NET ID. ORIG. NET. ID. NETWORK NAME TS ID. ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	TS ID. 100_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the Transport Stream ID.
ORIG. NET. ID. NETWORK NAME TS ID. PROGRAM ID. ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	PROGRAM ID 1_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the PROGRAM ID.
NETWORK NAME TS ID. PROGRAM ID. LCN ID. ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	EACEM ITC	Select the LCN ID.
TS ID. PROGRAM ID. LCN ID. L.C.N. ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	L.C.N. 1_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the LCN number.
PROGRAM ID. LCN ID. L.C.N. HD L.C.N. ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	HD L.C.N. 1_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the HD LCN number.
PROGRAM ID. LCN ID. L.C.N. SERVICE NAME ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	SERVICE NAME Chan A_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the Program Name.
LCN ID. L.C.N. SERVICE NAME PMT PID ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	VIDEO PMT 32_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the VIDEO PMT
L.C.N. SERVICE NAME PMT PID VIDEO PID ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	VIDEO PID 48_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the VIDEO PID
SERVICE NAME PMT PID VIDEO PID AUDIO PID ▶ ⬆ ⬇ ⬅	⊗ ↔ ⌂	AUDIO PID 49_ ⬅ X ⬅ ⬇ ⬅ 0123456789	Set the AUDIO PID

4.5- The language menu

Select in this menu your preferential language.

4.6 - Default configuration

When selecting this option, all your modifications will be lost, and the default factory settings will be restored.

5 - Programming using a PC

The settings of the TM220HD can also be changed using a PC.

First, please install the software **TMHDIface** on your PC. You can download this software from our internet site **anttron.com**

After installation of this software, connect the TM220HD using a USB cable (not included) to your personal computer. Then launch the program **TMHDIface**.

On the display of the TM220HD the message <USB> appears, indicating that the programming is now performed through your PC. The following window appears on your screen.

The screenshot shows the TMHDIface 1.5 (S2.6H0) software window. It contains several sections for configuring the TM220HD device:

- DVB-T / DVB-C:** Radio buttons for DVB-T (selected) and DVB-C. Fields for Freq. (kHz): 474000, TS Id.: 100, Bandwidth: 8 Mhz, Const.: QAM64, Sym. Rate: 6960, Mode: 8K, F.E.C.: 7/8, and Guard Int.: 1/32. A Level Att. slider is set to 0dB.
- IP:** Radio button for IP (selected). Fields for UDP, Address: 192.168.1.11, and Port: 1234.
- VIDEO:** Dropdown for HDMI, and a field for 15000 Kb/s.
- AUDIO:** Dropdown for HDMI, and a field for 256 Kb/s. HDMI-PCM Volume: x1.
- Network:** Fields for Vers.: 28, Original Id.: 8442, Id.: 10000, Name: NoName, and Id. LCN: EACEM.
- Service:** Fields for Id.: 1, Name: Chan A, LCN: 801, HD LCN: 801, PMT PID: 32, Video PID: 48, and Audio PID: 49.
- Hardware connected:** A status bar at the bottom with a green indicator light.

Now, all parameters discussed in Chapter 4 of this user manual can be modified by TMHDIface.

6 - Technical specifications

Video input	Input	HDMI
	Resolution modes	480p -576p -720p - 1080i
	Compression	H.264 – bitrate 5-15 Mb/s
Audio input	Input	HDMI
	Sample Rate	HDMI (32kHz / 44.1 kHz / 48 kHz)
	Compression	AAC-LC – bitrate 128-384 Kb/s
DVB Processing	Table insertion	PAT, PMT, SDT, NIT
	Configuration	Channel/network name, SID, LCN, TSID, ONID, NID, versions, audio, video PIDs...
DVB-T output	Output frequency / level	170-230 MHz + 470-862 MHz / > 80 dBμV
	Constellation - FEC	QPSK/16QAM/64QAM - 1/2, 2/3, 3/4, 5/6, 7/8
	Guard interval	1/4, 1/8, 1/16, 1/32
	Mode - MER	2K/8K - 35 dB
DVB-C output	Output frequency / level	50-862 MHz / > 80 dBμV
	Constellation - Symbolrate	16, 32, 64, 128, 256 QAM (EN 300 429) - 4,00 - 6,96 Msps
Power	DC 2.1 mm connector	+5V
	Consumption	10 Watts
Dimensions	LxWxH	170x130x35mm
	Weight	0.6 kg
EAN code	TM220HD	5420037692200